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10 April 1968

27 August 1968

~~MEMORANDUM FOR: Executive Director, NPIC~~~~SUBJECT~~ : ~~NPIC Equity in~~

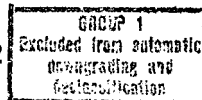
1. has been associated with NPIC since 1962 when was employed by as a consultant. Since that time, scientists have performed on eight specific tasks which have resulted in the following final reports:

a. "An Analysis of Activities of Photo Interpreters in CIA/PID (NPIC)," April, 1963 - This report consisted of a detailed accounting of the functions performed by NPIC PI's. It formed the basis for the development of an interpreter training program.

b. "A Study of Photographic - Image Recognition as a Function of Ground Resolution," February, 1964 - This study showed objectively for the first time that the usefulness of reconnaissance photography varies directly as a function of ground resolution and target type.

c. "Aircraft Image Analysis as a Function of Photographic Ground Resolution," November 1964 - This study showed that for a particular target type, different ground resolutions were required to extract individual essential elements of information. Even at a it was shown, certain desirable aircraft intelligence was not obtainable.

d. "The Effects of Stereo Convergence and Obliquity Angles on the Judged Worth of Aerial Photographs," March, 1965 - This study employed a

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scaled terrain model and showed (under the limited experimental conditions) that convergence angles of 10° , 20° , and 30° produced no significant differences in the information yield of stereo photography. It also showed constancy at obliquity angles of 0° , 10° , and 20° but demonstrated a gradual fall-off in useful intelligence from 30° to 60° .

e. "The Judged Worth of Aerial Photographs as a Function of Obliquity Angle with Scale Constant," April, 1967 - This task sought to correct the possible artifact present in the previous study where scale was allowed to decrease with increasing obliquity. Under these new conditions, it was reported that there are "no differences in the judged worth for intelligence purposes of aerial photographs as a function of obliquity angles from 0° to 60° ".

f. "The Measurement of Photographic Images by Human Operators," March, 1967 - This study was conducted with TID photogrammetrists performing a controlled, experimental mensuration task. Human pointing error was investigated as a function of edge spread (resolution), modulation (contrast), image shape, and image size. Major causes of decreased pointing accuracy were found to be increased edge spread and increased acuteness of angular objects. ~~Mod-~~ ^{Contrast} ~~ulation~~ change within the operational range caused no appreciable degradation of mensuration accuracy.

g. "The Analysis of Missile Sites as a Function of Photographic Ground Resolution," January, 1968 - This study was performed with NPIC interpreters and FMSAC analysts and employed photography of domestic ICBM sites. It showed that for the specific target category investigated, ground resolutions of better than ☐ produced no further intelligence yield than lesser image quality.

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h. "The Analysis of Radars as a Function of Photographic Ground Resolution," ^{October,} ~~May,~~ 1968 (estimated) - This study using scale models is presently being completed with the aid of NPIC interpreters and DDS&T electronics analysts. Its results are expected to establish a resolution requirement for the detailed interpretation of radar emplacements at a considerably better resolution level than the 19" obtained for offensive missile sites.

2. [] work for NPIC has been performed in conjunction with []

[] The cost to the Agency of these eight studies has been approximately [] over the past six years. Approximately half of this cost represents investment in []. Contractual sponsorship has been divided among NPIC, OSA, and OSP at various times during the course of these studies.

[] is currently under contract to perform further photographic resolution studies along with a first look at line-scan imagery considerations for Center exploitation in the future. ~~The period of performance on this follow-on contract is scheduled for May, 1968 through April, 1969 at cost of approximately []~~

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